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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/456,184	12/07/1999	HIROYUKI OKADA	15162/01320	6102

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SIDLEY AUSTIN BROWN & WOOD LLP  
717 NORTH HARWOOD  
SUITE 3400  
DALLAS, TX 75201

EXAMINER

DOUGHERTY, THOMAS M

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 02/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/456,184

Applicant(s)

OKADA, HIROYUKI

Examiner

Thomas M. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 17-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-22 is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,17,18,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 3,4,25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/7/99 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

The Applicants remarks are persuasive concerning the Okazaki reference ('899). The rejection based solely on Okazaki is withdrawn. However a further search was conducted which has resulted in citation of a different reference which bears on the patentability of this case.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent.

Claims 1, 2, 5, 17, 18, 23 and 24 are rejected under 35 U.S.C. 102(102) as being anticipated by Atsuta et al. (US 6,133,671). Atsuta shows (figs. 1 and 2A) a driving apparatus for driving a piezoelectric element serving as a driving source of an actuator comprising: a waveform generator (2) for generating a waveform signal varying over time; a first driver (4A) for generating a first driving signal (A), wherein the first driving signal (A) has a maximum voltage smaller than a voltage of inversion of polarization of the piezoelectric element (inherent or the device would not work) and has a waveform derived from the waveform signal, the first driver being coupled to provide the first driving signal to the piezoelectric element in the polarization direction (col. 5, ll. 53-54) of the piezoelectric element; and a second driver (4A') for generating a second driving signal (A'), wherein said second driving signal (A') has a maximum voltage smaller than

the voltage of inversion of polarization of the piezoelectric element and has a waveform derived from the waveform signal, the second driver (4A') being coupled to provide the second driving signal (A') to the piezoelectric element in a direction opposite to the polarization direction. The second driving signal (A') has a waveform which is an inversion of a waveform of the first driving signal (A). See especially the A and A' waves in figure 2. The first driver (4A) and the second driver (4A') respectively include an amplifier for amplifying the signal from the waveform generator. An electric power supply is inherent in such a device and the voltage level at the collector portion of the top transistors in the transistor pairs in the amplifiers is where such is connected.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Atsuta et al. (US 5,783,899) in view of Tsukimoto et al. (US 5,646,469). Given the invention of Atsuta et al. as noted above they do not show a second unit slidably held on a relatively movable against a first unit. Tsukimoto et al. show an actuator in an impact type actuator comprising a first unit (1) with the piezoelectric element and a second unit (2) slidably held on and relatively movable against the first unit (1). Tsukimoto does not show the voltage application scheme claimed by the Applicants. It would have been obvious to one having ordinary skill in the art to employ a slidably held component on

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the piezoelectric element unit of Atsuta at the time of his invention, such as the rotor shown by Tsukimoto et al. because this is an effective means to generate rotation in such a device as Tsukimoto et al. show.

***Allowable Subject Matter***

Claims 19-22 are allowed.

Claims 3, 4, 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not suggest or fairly show application of SAW tooth, sine or trapezoidal waves to both sides of a piezoelectric element and 180 degrees out of phase with each other. Furthermore, the prior art does not show or fairly suggest application of a first driving signal when an amplitude of a time varying signal is above a predetermined level, application of a second driving signal when the time varying signal is below that level or first and second driving signals of )volts when the time varying signal is equal to the predetermined level.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

*tmd*  
tmd

February 5, 2002

*Thomas M. Dougherty*  
THOMAS M. DOUGHERTY  
PRIMARY EXAMINER  
GROUP 2100  
*2800*